

# 2011 SHEA Poster Presentations

## Featuring ICU Medical, Inc. Products



### Differences in Bacterial Transfer and Fluid Path Colonization through Needlefree Connector-Catheter Systems In-Vitro

Marcia Ryder, PhD, MS, RN, Ryder Science, San Marcos, CA  
Garth A. James, PhD, Center for Biofilm Engineering, Bozeman, MT  
Elinor deLancy Pulchini, PhD, Center for Biofilm Engineering, Bozeman, MT  
Laura Bickle, BS, Center for Biofilm Engineering, Bozeman, MT  
Albert E. Parker, PhD, Center for Biofilm Engineering, Bozeman, MT

#### PURPOSE

The use of mechanical valve connectors, as opposed to split septum connectors, has been implicated as an infection risk. Differences exist in the transfer of bacteria through the various connectors (C) but the impact of repeated injection of bacteria into the bloodstream and the colonization of the catheter hub (CH) and internal lumen (IL) is unknown.

#### OBJECTIVE

The primary objectives of this study were to evaluate differences in transfer of bacteria through the connector-catheter system and biofilm formation in the C, CH and IL. Connectors evaluated using a in vitro model designed to simulate clinical use were: Clearlink™, SmartSite®, InVision-Plus®, MaxPlus®, Q-Syte® and MicroCLAVE®.

#### FINDINGS

The significant differences among connectors were observed for bacterial transfer and colonization of the catheter hub (CH) and internal lumen of the catheter (IL). The Q-Syte connector tested performed poorly compared to the other connectors while the MicroCLAVE performed better than the other connectors. The MicroCLAVE demonstrated a significantly smaller log density of bacteria than the other connectors. The CH and IL log density was also significantly smaller for the MicroCLAVE than for all the other connectors tested except the Clearlink.

Overall, the results suggest that connector selection may impact both bacterial transfer to the bloodstream and bacterial colonization of catheter hub and internal lumen.

## Three Years Experience of Central Line Associated Bloodstream Infections in the Intensive Care Units and Blood and Marrow Transplant Unit at an Academic Medical Center

Concepcion N. Moore, RN, MBA, CIC, University Medical Center, Tucson, AZ  
Rebecca L. Landreth, University Medical Center, Tucson, AZ  
Cynthia Maschmeier, University Medical Center, Tucson, AZ

### PURPOSE

Bloodstream infection (BSI) is the most common infection in Intensive Care Units (ICUs); most of them are central venous catheter (CVC) related. Compliance with the Institute for Healthcare Improvement (IHI) bundles, adherence to hand hygiene guidelines, application of evidence-based findings and teamwork are crucial in the chase for zero infections.

### OBJECTIVE

To describe the interventions taken that led to the success of the improvement in central line associated bloodstream infections (CLABSIs) in the Pediatric and Adult intensive care units, and the Blood and Marrow Transplant Unit.

### FINDINGS

The rate of catheter related bloodstream infections continue to show improvement since a IHI Central Line Bundle was implemented; hand hygiene protocol was enforced into compliance; the CLAVE and now MicroCLAVE were re-introduced to the facility, and in 2010 the clear version of the MicroCLAVE was adapted; as well as implementation and use of silver and chlorhexidine coated catheters. The results show an overall improvement and reduction of infections by 43%. Infections have gone from 5.09 (in 2007) to 2.06 (in 2010) since implementation of CLAVE and now MicroCLAVE.

Previous poster presentation discussed and illustrated a reduction to 2.64 (2009 results). 2010 results are being included to show additional reduction in infection rates to 2.06 with the MicroCLAVE.

## A Multi-Faceted Approach to Reduction of Blood Culture Contaminants at an Academic Medical Center

Rebecca L. Landreth, RN, University Medical Center, Tucson, AZ  
Concepcion N. Moore, RN, MBA, CIC, University Medical Center, Tucson, AZ  
Cynthia Maschmeier, University Medical Center, Tucson, AZ

### PURPOSE

Blood Culture Contaminants (BCC) can lead to increased cost of care, prolonged length of stay and subject patients to unnecessary antimicrobial therapy. Our hospital identified an absence of uniform education, lack of consistent collection technique and inadequate skin preparation. We calculated a contaminant costs our facility \$13,600. We performed a retrospective and prospective study to determine an appropriate method to draw central line ordered blood cultures (BC): either through the needleless neutral displacement connector or hub-to-hub.

### OBJECTIVE

To educate staff, create a blood culture drawing protocol, identify staff on weekly reports, implement use of appropriate products for site cleansing and determine if drawing through the neutral displacement connector would reduce contaminated BC from central lines.

### FINDINGS

In 2006, the BCC rate was 6.96%. With the interventions implemented, the BCC rate fell to below the national standard of 3%. In 2009, UMC began a study drawing central line ordered blood cultures through the MicroCLAVE, in the first year of the study they saw a 48% reduction in BCC with a 62% reduction in BCC from central line draws. The last six months of the house wide study showed a reduction of BCC from central line drawn specimens of 34%. BCC rate in 2010 was down to 1.42%.